

REMARKS

Claims 1-17 are pending in the present application. Claims 1 and 3-14 are rejected. Claim 2 is objected to. Claims 1, 5, 7 and 11 are herein amended. New claims 15-17 are herein added. The claims were further amended due to a discovered typographical error, which erroneously indicated that the second polyester resin was non-linear. It is in fact linear, and this correction is supported, on page 24, Table 1, and in paragraph 0022 of Japanese Patent Application No. 2001-101159, priority of which was claimed in the present application.

Allowable Claims

Claim 2 is objected to as dependent upon a rejected base claim, but would be allowable if rewritten in independent form including the limitations of the base claim and any intervening claims.

Claims 8 and 12 would be allowable if rewritten to overcome the rejection under 35 U.S.C. §112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Applicants submit herewith new claims 15-17, which encompass the above claims in independent form.

Objections to the Specification

The Examiner asserts that the use of trademarks, e.g., Radiolite at page 22, line 6, was noted in the specification.

Applicants respectfully submit that "Radiolite" is not a trademark, but rather a non-trademarked name of a type of mineral, which does not require treatment as a trade mark. Therefore, no correction is necessary.

The Examiner notes that according to Table 5 at page 35, the toners in comparative examples 7 and 8, and examples 19 through 21 all appear to have the same composition, but the toners in those examples do not provide the same results.

Applicants respectfully note that these examples are included to show the different results as a function of the varied photofixing energy (0.5, 1.0, 3.0, 6.0, and 7.0 J/cm².)

Claim Rejections under 35 U.S.C. §112, second paragraph

Claims 5 and 7-14 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regards as the invention.

The Examiner asserts that Claim 5 is indefinite in the phrase "the binder resin contains at least a polyester resin originating from an alkylene oxide adduct of bisphenol A . . ." because it is not clear whether the polyester resin recited in claim 5 refers to either the first or second non-linear polyester resins recited in claim 1, or to another polyester resin.

Applicants herein amend claim 5 to read "wherein ~~the binder resin contains~~ at least one of the first polyester resin and the second polyester resin is a polyester resin originating from an

alkylene oxide adduct of bisphenol A represented by the following formula (I)...". Applicants submit that this clarifying amendment overcomes the rejection.

The Examiner asserts that Claims 7-10 are indefinite in the phrase "[a] method of forming a color image on a recording medium by means of an electrophotographic system" (emphasis added) because it is not clear what is the scope of the phrase "means of." It is not clear whether the claims require an electrophotographic system as disclosed in the specification or equivalents thereof, or merely some features of an electrophotographic system.

Applicants herein delete the phrase "by means of an electrophotographic system".

The Examiner asserts that Claims 11-14 are indefinite in the phrase "[a]n apparatus for forming a color image on a recording medium by means of an electrophotographic system" (emphasis added) because it is not clear what is the scope of the phrase "means of."

As above, Applicants herein delete the phrase "by means of an electrophotographic system".

Claim Rejections under 35 U.S.C. §102(b)

Claims 1, 3/1, 5/1, and 6/1 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No 4,863,824 to Uchida et al., evidenced by U.S. Patent No. 5,432,035 to Katagiri et al.

The Examiner asserts that Uchida discloses a color toner that meets the claimed limitations. The Examiner notes that Uchida et al. does not identify carbon black as an infrared absorber, and asserts that it is well-known in the art that carbon black is an infrared absorber. Katagiri et al. discloses that black pigments such as carbon black "have a high infrared light absorption capability."

The Examiner notes that the instant claims do not exclude the colorant and infrared absorber from being the same component.

The Examiner notes that Uchida et al. does not disclose that his color toner is used in an imaging process employing a photofixing system. However, the recitation "used in an imaging process employing a photofixing system" is based on intended use and does not distinguish the instant claimed color toner from the toner taught by Uchida et al.

Applicants herein amend the claims to affirmatively recite that the compound is capable of use in a photofixing method, which Applicants submit patentably distinguishes the invention from the cited references.

Furthermore, Applicants respectfully disagree with this rejection for the very reason noted by the Examiner. The claims clearly recite (both) a colorant and an infrared absorber. Uchida et al. does not disclose both an infrared absorber and a colorant. While carbon black may inherently function as an infrared absorber, it is clear that Uchida does not disclose using both compounds.

Claim Rejections under 35 U.S.C. §103(a)

Claims 1, 3/1, 4/3/1, 5/1, and 6/1 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,232,029 B1 to Kushino et al. combined with Uchida et al.

The Examiner asserts that it would have been obvious for a person having ordinary skill in the art to use the polyester resin of Uchida et al. as the toner binder resin in the toner disclosed by Kushino et al., because that person would have had a reasonable expectation of successfully

obtaining a flash-fixing electrophotographic toner having a desired particle size obtained by standard grinding techniques and good storage stability.

Applicants respectfully note that not all of the limitations of the present claims are taught by the cited references. In particular, the specifically claimed polyesters are not taught or suggested by the cited references. Applicants respectfully submit that the cited reference merely discloses polyester resin as a binder, and does not teach that the toner binder comprises a specific polyester resin as recited in claim 1. As noted in the instant appended examples, the specifically claimed polyesters are essential to obtain the remarkable effects of the present invention.

Moreover, Applicants note that the toner of Uchida et al. is for a hot roll-fixing method, and does not teach the use of the toner in a photofixing system. As clarified by the present amendments, the claims specifically refer to photofixing toners.

Claims 7, 9/7, 10/9/7, 11, 13/11, and 14/13/11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kushino et al. combined with Uchida et al. as applied to claims 1, 3/1, 4/3/1, 5/1, and 6/1, above, further combined with Diamond, Handbook of Imaging Materials, pp. 160-163.

The Examiner asserts that Kushino et al. combined with Uchida et al. renders obvious a flash-fixing electrophotographic toner as described in paragraph 8 above, which is incorporated herein by reference.

The Examiner further asserts that Kushino et al. discloses that the flash fixing toner can be used in an electrophotographic printing process, and that toner fixing is accomplished with a Xenon flash lamp having an "electric input energy per area" in the range of 1.6 to 3 J/cm², which is within

the range of 1.0 to 6.0 J/cm² recited in instant claims 7 and 11. Kushino et al. discloses that the flash fixing toner can be used in copying devices of the Carlson system. Col. 15, line 41.

The Examiner concludes that it would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kushino et al. and Diamond, to use the flash fixing electrophotographic toner rendered obvious by the combined teachings of Kushino et al. and Uchida et al. in the electrophotographic imaging process and apparatus comprising the steps and components recited in instant claims 7 and 11, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic imaging process and copying apparatus that provide color toner images without fog and voids as taught by Kushino et al.

As noted above, Applicants respectfully submit that not all of the limitations of the present claims are taught by the cited references. In particular, the specifically claimed polyesters are not taught or suggested by the cited references. Applicants respectfully submit that the cited reference merely discloses polyester resin as a binder, and does not teach that the toner binder comprises a specific polyester resin as recited in claim 1. As noted in the instant appended examples, the specifically claimed polyesters are essential to obtain the remarkable effects of the present invention.

Moreover, Applicants note that the toner of Uchida et al. is for a hot roll-fixing method, and does not teach the use of the toner in a photofixing system. As clarified by the present amendments, the claims specifically refer to photofixing toners. Therefore, Applicants request that the rejection as to claims 7, 9/7, 10/9/7, 11, 13/11, and 14/13/11 be withdrawn.

Yasushige NAKAMURA et al.
Serial No. 09/935,668

Group Art Unit: 1753
Examiner: Janice L. Dote

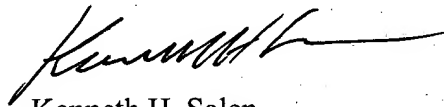
For at least the foregoing reasons, Applicants submit that the claimed invention, as herein amended, patentably distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by Applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone Applicants' undersigned attorney.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension, or any other fees that may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

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Version with Markings to Show Changes Made
Serial No. 09/935,668

IN THE CLAIMS:

The claims were amended as follows:

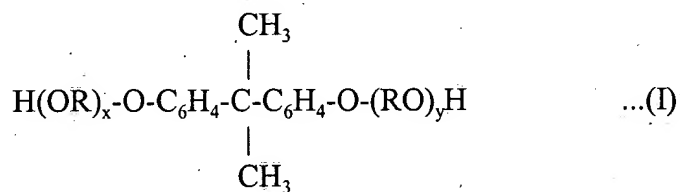
1. An imaging color toner comprising at least a binder resin, a colorant and an infrared absorber, ~~which is used in an imaging process employing a photofixing system;~~ wherein

the binder resin contains, as a principal component, a polyester resin obtained by mixing a first polyester resin with a second polyester resin in a weight ratio of 80:20 to 20:80;

the first polyester resin is a non-linear polyester resin having a softening point Tsp of not lower than 120°C and lower than 170°C, and also contains 1 to 25 parts by weight of a chloroform-insoluble content as the component; and

the second polyester resin is a ~~non-linear~~ linear polyester resin having a softening point Tsp of not lower than 80°C and lower than 110°C ;
wherein the toner is capable of being photofixed.

5. The imaging color toner according to claim 1 or 2, wherein ~~the binder resin contains~~ at least one of the first polyester resin and the second polyester resin is a polyester resin originating from an alkylene oxide adduct of bisphenol A represented by the following formula (I):



wherein R represents a substituted or unsubstituted alkyl group, and x and y each represents an integer of 1 or more.

7. A method of forming a color image on a recording medium ~~by means of an electrophotographic system~~ which comprises the steps of forming an electrostatic latent image by image exposure, visualizing the electrostatic latent image by development, transferring the visualized image onto the recording medium and fixing the transferred image, wherein

a developing agent comprising a color toner, which comprises at least a binder resin, a colorant and an infrared absorber, is used in the step of developing the electrostatic latent image,

the binder resin containing, as a principal component, a polyester resin obtained by mixing a first polyester resin with a second polyester resin in a weight ratio of 80:20 to 20:80;

the first polyester resin being a non-linear polyester resin having a softening point Tsp of not lower than 120°C and lower than 170°C, and also containing 1 to 25 parts by weight of a chloroform insoluble content as the component; and

the second polyester resin being a ~~non-linear~~ linear polyester resin having a softening point Tsp of not lower than 80°C and lower than 110°C; and

a photofixing system is used at a light emission energy density ranging from 1.0 to 6.0 J/cm² in the step of fixing the transferred image after transferring the image visualized by using the developing agent onto the recording medium.

11. An apparatus for forming a color image on a recording medium ~~by means of an electrophotographic system~~, comprising an image exposing device for forming an electrostatic latent image, a developing device for visualizing the electrostatic latent image, an image transferring device for transferring the visualized image onto the recording medium, and an imaging fixing device for fixing the transferred image onto the recording medium, wherein

the developing device is loaded with a developing agent containing a color toner, which comprises at least a binder resin, a colorant and an infrared absorber,

the binder resin containing, as a principal component, a polyester resin obtained by mixing a first polyester resin with a second polyester resin in a weight ratio of 80:20 to 20:80;

the first polyester resin being a non linear polyester resin having a softening point Tsp of not lower than 120°C and lower than 170°C, and also containing 1 to 25 parts by weight of a chloroform-insoluble content as the component; and

the second polyester resin being a ~~non-linear~~ linear polyester resin having a softening point Tsp of not lower than 80°C and lower than 110°C; and

the image fixing device being provided with a photofixing device having a light emission energy density ranging from 1.0 to 6.0 J/cm².